

CELL-e'BRATION

In - venting all that's STEMulating from NCRM

Bulletin of Nichi-In Centre for Regenerative Medicine | III Anniversary Issue; Oct 2008; | Chamber III, Count I

INDIAS FIRST PHD
PROGRAMME IN
STEM CELL RESEARCH
...PAGE 10



NICHI-ASIA TO OPEN STEM
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The **Fujio Cup Quiz** and a Cartoon competition along with the Symposium on Regenerative Medicine dedicated to the memory of **Dr G. Sitalakshmi** were the highlights of the II anniversary of NCRM held on the 27th October 2007 at Chennai.

The **Cartoon Competition** was a new addition to the series of commemorative events during the II anniversary. Though it was restricted only to the quiz participants, there was a tremendous response. Novel ideas and new concoctions on stem cell potentials were unveiled by the budding scientists.

Mr. Yoshio Morozumi, Chairman Nichi-In had come to attend this event from Japan, who in his address at the Anniversary function said he was impressed by the enthusiasm and vibrance of the Indian youth and expressed his hope that if this pace of growth is continued, India will soon become No.1 in the world in Biotechnology research. He also assured that NCRM will continue doing research on problems which are of importance to the developing world.

Dr. K.M Cherian appreciated the efforts of NCRM in bringing to India, world class technology in tissue engineering. He insisted the importance of research with long term visions and appreciated the heights reached by NCRM in just two years.

Honourable **Mr. Kazuo Minagawa, Consul General of Japan** at Chennai in his address as the chief guest of the day's function lauded the progress of NCRM in all three fronts viz., Basic research, Academic publications and presentations and Translational research with more than 10 collaborations both in India and abroad within a short span of two years. The winners of the Quiz competition were handed over the ever-rotating Fujio Cup. This time the Kilpauk Medical College, Chennai team were the winners and Dr MGR Medical University Team were the runners. The cartoon competition was won by Sankara Nethralaya Team and the runners were from A.C College of Technology, Chennai.

Dr. Rajpal Vohra, Professor, Vitreo-Retinal Department of AIIMS, New Delhi gave his feedback about the event and assured his team's support with the research projects of NCRM.

II years of progress in Academics, Research & Translation



II FUJIO CUP winners with the Consul General, Dr KM Cherian & Mr Yoshio Morozumi

" Eight research collaborations within India and Five Research collaborations with Japanese institutes - A commendable progress within two years " - Said the Consul General of Japan.

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Stem cells reverse pathology of oral sub-mucosal fibrosis to normalcy (P. 11)

Prof.S.P.Thyagarajan (Research-Advisor, Ramachandra University) inaugurated the **II Fujio Cup Quiz** on stem cells & regenerative medicine which as usual had a great response from the students of both lifesciences and medicine. Following that the II Anniversary bulletin of NCRM "Cellebration" was released by Prof. S.Surendran (Chief of Gastroenterology, Stanley Medical College, Chennai). Felicitations were offered by him and Dr.S.Swaminathan, (Dean, Sponsored Research, Sastra University, Tanjore)



From L>R: Prof.S.P.Thyagarajan, Prof.S.Surendran & Dr.S.Swaminathan with the Cellebration.

The FUJIO CUP Roll of Honour

The FIRST FCQ 2006

Winners:
Mr. C. Anand & Mr. A.R. Karuppiah
PSG Medical College, Kovai

Runners:
Mr. Gautham & Mr. Joe Varghese
Christian Medical College, Vellore

The SECOND FCQ 2007

Winners:
Mr. B. Senthilvelan & Mr. K. Anand
Kilpauk Medical College, Chennai

Runners:
Dr. Krishnamoorthy & Dr.S.Subash
Dr. MGR Medical University, Chennai



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(Biomaterials & Tissue Engineering)

NCRM Areas of Research

1. Corneal Limbal Stem Cells

Aimed at finding cell therapy solutions for corneal surface diseases such as Persistent Corneal Ulcer, Stevens-Johnson syndrome etc.,
Potential beneficiaries*: 15000 patients per year in India
(Collaborating Instt.: Sankara Nethralaya, Chennai)

2. Hepatic Progenitor Cells

Aimed at finding cell therapy solutions for Acute Liver failure
Potential beneficiaries: 70,000 patients per year in India
(Collaborating Instt.: Owaisi Hospital, Hyderabad)

3. Corneal Endothelial Precursors

Aimed at finding cell therapy solutions for diseases of the Corneal Endothelium such as Bullous Keratopathy
Potential beneficiaries: 12,000 patients per year in India
(Collaborating Instt.: Joseph Eye Hospital, Trichy, Darshan Eye Care & Rajan Eye Care, Chennai, The Light Eye Hospital, Dharmapuri, Shah Satnamji Hospital, Sirsa, Aditya Jyot Eye Hospital, Mumbai)

4. Retinal Stem Cells / RPE Cells

Aimed at finding cell therapy solutions for diseases of the Retina such as Age Related Macular Degeneration, Retinitis Pigmentosa etc.,
Potential beneficiaries: 60,000 patients per year in India
(Collaborating instt.: Aditya Jyot Eye Hospital, Mumbai)

5. Cell Therapeutics for Cartilage Defects

Aimed at finding cell therapy solutions for Focal Articular Cartilage Defects and Sports Injuries of the Cartilage
Potential beneficiaries: 60,000 patients per year in India
(Collaborating Instt.: SRMC & RI, Chennai)

6. Cancer Stem Cells

Aimed at finding the characters of Cancer Stem Cells to develop targeted therapies for cancer.
Potential beneficiaries: Numerous
(Collaborating Instt.: Indian Institute of Science, Bangalore)

7. Wound Healing

To find cell therapy based solutions using synthetic scaffolds for burns.
Potential beneficiaries: Numerous
(Collaborating Instt.: Institute of Pathology, ICMR, New Delhi)

8. Human Saphenous Vein Endothelial Cell expansion

To find feasibility of a cell coated intraluminal stent
Potential beneficiaries: Numerous
(Collaborating Instt.: Lancer Medical Technology, Ahmedabad)
* Numbers are approximate and indicate the beneficiaries when the concerned research developments convert to a clinical application

Forty one institutes participated in the II Fujio Cup Quiz and the prelims was considered a bit tougher this time. The finals was as usual, informative, entertaining and thought provoking. Thanks to the quiz master Dr. John Sudhakar, an ophthalmologist by specialty who has once again been quoted as the most impressive factor in the Fujio Cup Quiz by the participants in their feedback.



The Quiz Biz Professional Dr. John Sudhakar during finals



75 teams attended the pre-lims from which 6 were chosen for finals



Runners: Dr Krishnamoorthy & Dr Subash being awarded

One of the members of the runners team Dr. Krishnamoorthy said it was a great experience of learning to attend FCQ. He and his team mate Dr. Subash were extremely glad about this. Dr. Krishnamoorthy is now working as an Assistant Professor in the Department of Transfusion Medicine, Sri Ramachandra Medical College & Research Institute, Chennai.

II Anniversary Symposium on Stem Cells & RM Dedicated to the memory of Dr.G.Sitalakshmi



Dr.H.N.Madhavan presenting the work of Dr.G.Sitalakshmi. Sitting L>R: Dr.V.Dedeepiya, Dr.Santhi, Dr.Ravi Kumar, Dr.S.Arumugam, Dr. S.Sankaranarayanan & Dr.L.K.Yerneni.

The II Anniversary symposium started with the presentation of the work of (Late) Dr. G.Sitalakshmi, who was the principal investigator of the corneal limbal stem cell work in a collaborative work between Sankara Nethralaya and NCRM, as the symposium was dedicated to her memory. Dr.H.N.Madhavan presented this work elaborately. The research done in animals when taken to clinical application, will benefit numerous patients, who are suffering from Limbal Stem Cell Deficiency (LSCD) causing jeopardy to their vision.

Dr.Lakshman Kumar Yerneni (*Institute of Pathology - ICMR*) talked about the developments in the ongoing work between NCRM and his institute on cell based therapies for wound healing to the victims of severe burns, following which Dr. Sankaranarayanan (*Rajah Muthiah Dental College, Chidambaram*) spoke on his experience with autologous bone marrow stem cells in treating Oral Sub Mucosal Fibrosis (OSMF).



Dr. Sujatha Mohanty

Dr.S.Arumugam (*Sri Ramachandra Medical College*) presented his work on long term in-vitro culture of human chondrocytes jointly with NCRM and the molecular characterization. Dr. Shanthi Vijayaraghavan spoke about the efficacy of autologous bone marrow stem cells in liver cirrhosis.



Dr. Sunitha Saxena

In cardiology the autologous bone marrow stem cells when given to patients with Dilated Cardiomyopathy (DCM) and end stage cardiac failure where conventional treatments such as surgical revascularization or interventional treatments such as angioplasty with stent are not possible, stem cells when applied yielded positive results in a selected group of patients in their short term follow-up data as presented by Dr.Madhushankar (*Frontier Lifeline Hospital, Chennai*).

Six-month follow-up data of two patients with peripheral vascular occlusive disease as a sequel to long term diabetes and hypertension otherwise destined for amputation, who were administered autologous bone marrow stem cells with successful limb salvage was the summary of the presentation by Dr.S.R.Subrammaniyan (*Chief Vascular Surgeon, Vijaya Hospital, Chennai*). In one patient even the pulsatile flow in the affected lower limb resumed and both are now able to use the treated limbs.

The presentations followed an open discussion with the floor moderated by Dr. Sujatha Mohanty (*ORBO, AIIMS, New Delhi*) and Dr. Sunitha Saxena (*Director, IOP-ICMR, New Delhi*).

International Visitors at NCRM



"Fascinating work that could help patients in the future"

Mr. Nicco Forraz
Novussanguis, UK



Prof. Colin McGuckin
Northeast England Stem Cell Institute, UK



"Great facility for a promising future"

Dr. Athi Venkatesh
Director, Kingwood Psychiatry, Texas, USA



"Great facility. Very professional presentation. Proud to have visited your place"

Mr. A. Yogeswaran
Director, NiSCCELL, Malaysia



"Congratulation on nice research & development facilities. All the best wishes for your experiments"

Dr. Mousthapha Kassem
Endocrinologist - Odense Hospital
South Denmark University, Denmark

Interaction and meetings with Stem Cell Network (SCN), Canada & University of Toronto lead to a MoU with TPRM (Training Program in Regenerative Medicine) & NCRM

The academic credentials of NCRM paved the way for an interaction with the TPRM & Stem Cell Network (SCN) of Canada. Following a telecon meeting with TPRM, a meeting was fixed beside the ISSCR meeting at Philadelphia in June in which Dr. Abraham, NCRM met Ms. Sophie Charge and Mr. Drew Lyall, Directors of the SCN, Canada, that gave an opportunity to understand each others institutes' activities, goals and the future plans.



L>R Dr. Abraham, Ms. Sophie Charge and Mr. Drew Lyall at PA Convention Centre, PA, USA.

A second meeting was fixed then in the following week at which Dr. Abraham met Prof. Gary Levy (Director, TPRM & Multi Organ Transplant Programme, Univ. of Toronto General Hospital), Prof. Michael Ratcliffe (Chair, Dept. of Immunology), and Prof. Gordon Keller (Director, Mc Ewen Centre for Regenerative Medicine) in the University of Toronto, Canada in which it was decided to sign a MoU to start a training program in RM.

The MoU was signed in August 2008 and a team of five clinicians and five basic scientists have been chosen for the first batch of the NCRM-TPRM program and NCRM becomes the FIRST institute in India to have such a prestigious affiliation.



Prof. Gary Levy, Dr. Samuel Abraham and Prof. Michael Ratcliffe

What is so special about the TPRM?

The TPRM is affiliated to the University of Toronto, McMaster University and Ottawa University.

University of Toronto campus has produced 10 Nobel Laurates and it is the place, from where the lectures are being telecast.

University of Toronto is the institute where in 1961 James E. Till and Ernest A. McCulloch discovered the hematopoietic stem cell.

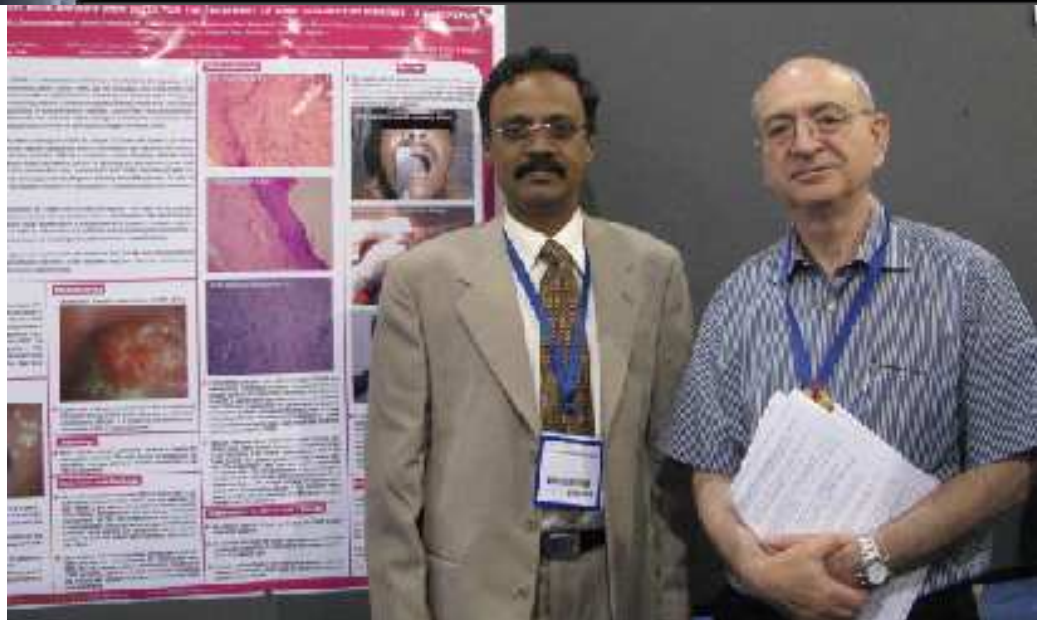
This is the basis for bone marrow transplantation, which is a highly successful clinical story today.



Three papers

were presented by NCRM and its collaborators in the ISSCR meeting 2008.

Dr.S.Sankaranarayanan, (Prof. of Oral Pathology, Karpaga-Vinayagar Medical College) presented his work on autologous bone marrow stem cells reversing the pathology of Oral SubMucosal Fibrosis (OSMF). Details Page 11. Internationally renowned Dr.Pitaru of Israel, appreciated the work as his team has also been working on the pluripotency of buccal mucosal epithelial cells. He congratulated the team.



Dr.S.Sankaranarayanan with Prof. Pitaru in the ISSCR meeting

2. The in-vitro expansion of human saphenous vein endothelial cells for long term and their characterization done in collaboration with Lancer Medical Technology was presented in the meeting. The NCRM team has proven that by employing novel biomaterials it is possible to keep the viability and expand the cells for upto 60 days in the lab. This study got a travel award to a NCRM scholar by ISSCR (Page.6) and this finding has vast potentials (Page.7).

3. Application of in-vitro expanded corneal limbal epithelial stem cells could restore vision to normalcy in a rabbit model which was a study presented in the ISSCR. This was conducted jointly between Sankara Nethralaya and NCRM. This could be probably the first time that, expansion of such cells have been made possible without any biological material such as Human Amniotic Membrane or 3T3 feeder layer and the in-vivo safety & efficacy are also proven. The clinical application of the findings will have a very good impact in restoring the vision of LSCD patients (Page. 9)

The 7th Congress of the Japanese Society for Regenerative Medicine

第7回 日本再生医療学会総会

The 7th Congress of the Japanese Society for Regenerative Medicine was held at Nagoya in March 2008.

The clinical studies of NCRM along with collaborating hospitals in treating neuronal and peripheral vascular diseases were presented in both oral and poster sessions. The one year follow-up in cases with spinal cord injury show that the predictors of better outcome are lower level of injury, immediate fixation of the vertebrae after injury and younger age. In peripheral vascular diseases the delegates appreciated the outcome and the team's effort for an excellent wound care.

Frontier Conclave 2007 on Stem Cells & Tissue Engineering



Mr.S.Baskar with Prof.Michael Rosen

The Frontier Conclave of 2007 was conducted by Dr.K.M.Cherien Heart Foundation, Chennai.

The 2007 meeting was dedicated to the evolving specialty of stem cells and regenerative medicine with several internationally renowned speakers delivering lectures.

Prof. Michael Rosen of Columbia University presented his research work on stem cell based treatment possibilities to cardiac arrhythmias.



Mr.Manjunath & Mr Senthilkumar with Prof.Kassem

Prof. Chachques gave a thorough insight into the myocardial remodelling by stem cells after infarction in his patients. The NCRM team presented their work on cell therapeutics for retinal degenerative diseases and corneal dystrophy.

Stem cell research sees him through to Japan



The Consul General of Japan congratulating Mr. Manjunath at the consulate

It was a dream come true for Mr. S. Manjunath, Research Scholar, NCRM as he got a fellowship to work in the laboratory of Prof. Sakaida in Yamaguchi University, Japan.

Manjunath hails from Virudhunagar and had his post-graduation in Microbiology from S.V.N. College, Madurai. He joined NCRM in 2006 and was in-charge of the nano material based tissue engineering project



With Dr. Terai, Prof. Sakaida and Dr. Takami in their conference room.

Two years of his hard work in NCRM lab has yielded him this honour. He has been working since 2006 on nanomaterial based expansion of various kinds of cells in specific lineages and also in an undifferentiated manner. Prof. Sakaida upon seeing the earlier work, was impressed and helped him get the scholarship which has enabled him learn the various characterization methodologies to identify culture expanded cells apart from further studies on undifferentiated expansion of bone marrow hematopoietic and mesenchymal stem cells and their molecular characterization and immunophenotyping.

The Consul General of Japan congratulated him on his selection and wished NCRM establish more such collaborations to give similar opportunities to many Indian youth.

Another feather... ISSCR award to NCRM Scholar



The International Society of Stem Cell Research Annual meeting held in 2008 in Philadelphia, USA has awarded a travel grant to Mr. P. Murugan, Research Scholar at NCRM.

Mr. P. Murugan is a native of Okkilipatti and had his post-graduation in Biotechnology from Mahendra Arts & Science College, Kalipatti, Tiruchengode, Namakkal Dist., His work was on long term culture expansion of human saphenous vein endothelial cells using nano-polymers.



Manjunath with his colleagues during a picnic helping them make "Okonomiyaki" - a Japanese style pan cake with seafood

Developments in ongoing projects

Research on wound healing with Institute of Pathology-ICMR, New Delhi

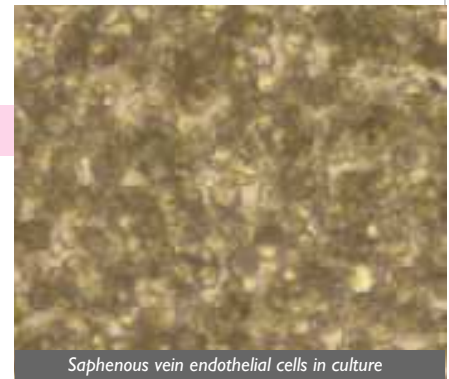
A project on the possible utility of polymer based biomaterials in proliferating human skin keratinocyte stem cells in an animal product-free growth conditions is being carried out at the Institute of Pathology (Indian Council of Medical Research), New Delhi under the guidance of Dr. Lakshmana K Yerneni, Scientist C. The project is aimed at producing better cell-based therapies to enhance the present regenerative approaches in wound healing. The investigations so far have indicated favourable action of our methods and culture-cocktails in weeding out the contaminating fibroblasts in the absence of feeder cells. Further research work on stimulating the keratinocyte stem cells using several combinations and permutations based on present protocols and combining novel strategies and materials is being carried out.



The team: Dr L.K.Yerneni (Sitting) L>R: Dharmender, Mr.Vijender, Rishi Man Chug, & Ashok Kumar.

Research on Vascular Endothelium with Lancer Medical Technology

Long term in-vitro expansion of human saphenous vein has been made possible. These cells could be coated on vascular grafts and intra-luminal devices with appropriate technology. This we postulate would make the artificial prosthesis become less allergenic and induce lesser inflammation. This paper was presented in the ISSCR 2008 meeting. Further studies are underway to enhance the outcome by applying suitable technologies for coating the cells on different surfaces.



Saphenous vein endothelial cells in culture

MoU with Kavery Medical Centre

Initiatives for a tripartite work involving Bharatidasan Univ.,

A MoU between Kavery Medical Centre (KMC), Trichy and NCRM was signed following which a Stem Cell Research Centre was inaugurated in the newly acquired campus of Sea Horse Hospital, Trichy. The consul general of Japan Honourble Mr. Kazuo Minagawa appreciated such initiatives for research and mentioned about the cultural heritage of the Trichy-Tanjore region. He quoted a book written by a Japanese author titled "Dignity of a Nation" which was a best seller in Japan as the author had travelled in this region and has written that the Pious nature of the people in the region, spiritual values being kept above the materialistic values and fertile land with natural resources are important for developing geniuses which are very much available in this region. The Vice-Chancellor of Bharatidasan University Prof. M. Ponnaivaikko said that the ethical issues are to be kept in mind in such researches and also said the university would be willing to cooperate on a tripartite MoU and work on Regenerative Medicine with KMC and NCRM.

The following day the NCRM, KMC team comprising of Prof. S. Sankaranarayanan and CEO of KMC, Dr. Chandrakumar met the Vice-Chancellor and his team of professors and scientists in which it was proposed to start research in the areas of Root Regeneration of Teeth and HLA studies of patients with genetic diseases such as Retinitis Pigmentosa. The animal and basic study facilities at the University, clinical expertise of KMC and the biomaterial based cell culture and tissue engineering expertise of NCRM will be synergically used in specific areas of research in Regenerative Medicine.



The Consul General (2nd from Left) inaugurating the stem cell research centre. From L>R Prof. Ponnaivaikko, The Consul General, Dr. Abraham, Dr. Chandrakumar, Dr. Selvaraj and Prof. Sankaranarayanan.



Nichi-Asia Centre for Stem Cell & Regenerative Medicine

The Nichi-Asia Life Science Sdn. Bhd will be shortly inaugurating their Nichi-Asia Centre for Stem Cell & Regenerative Medicine (NiSCell) in Kuala Lumpur, Malaysia. NCRM and their Japanese collaborators provide technology to NiSCell. This centre will have four cGMP accredited clean rooms for stem cell processing and expansion with all necessary approvals.



Front view of the NiSCell; 3500Sq. ft of Class 10K space will house 4 cGMP clean rooms

The NiSCell will be headed by Dato. Dr. A. Krishnamoorthy, a renowned general physician in Kuala Lumpur and former General Secretary of the Commonwealth Association of Physicians.



Dato. Dr. A. Krishnamoorthy

NiSCell will provide Autologous Immune Enhancement Therapy (AIET) for cancer using NK cells and Anti-Tumour Lymphocytes as well as Autologous Bone Marrow Stem cell based applications which are clinically proven, through their collaborating hospitals in Malaysia, Singapore, Indonesia and Brunei.

Scientists from Japan, India and Malaysia will be working with together on research projects with emphasis on further enhancing the outcome of stem cell based treatments such as that derived from bone marrow, umbilical cord blood and peripheral blood in collaboration with several institutes and hospitals in the four countries. International collaborations for such research and academic activities and PhD programmes in affiliation with domestic and international universities will be started in April 2009. More details on NiSCell available at: www.nichi-asia.org

CESBANK! Whats that?

CESBANK stands for
Corneal Endothelial Stem cell BANK

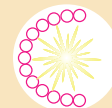
CESBANK is an initiative of NCRM to provide vision to patients suffering from diseases affecting the endothelium of the cornea, most commonly Bullous Keratopathy



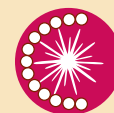
CESBANK will be an organization, capable of expanding corneal endothelium taken from one donor cornea by 5-14 folds so that it can be used to treat 5-14 eyes; which until now can be used for only one eye without expansion



The technology that has been standardized by NCRM will equip CESBANK receive the donor endothelium from places with a transportation time of upto 48 Hrs and send the expanded cells to far away places where it can be used to treat the patients

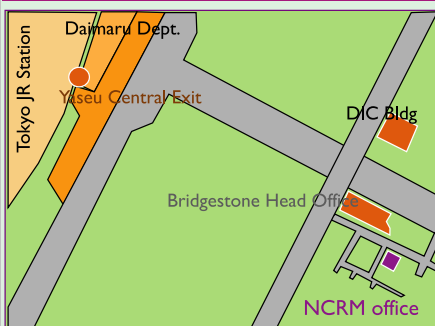


With the proposed plan, CESBANK can provide remedy to 14,000 patients per year and the cell based remedy can be delivered to countries and destinations within 8 Hrs of reach by air from the CESBANK, wherever it is located.



More details available at
www.cesbank.org

NCRM - Tokyo office opened



NCRM Tokyo office was opened on the 07th January 2008. This office will be headed by Mr. Yoshio Morozumi and will function as a global liaison office of NCRM for (i) Promoting medical tourism in India by tapping the Japanese and south east asian market, (ii) Liaisoning among the Japanese collaborators better and to develop more collaborations with Japanese institutes and industry and (iii) Coordinating the Intellectual property related issues on various research findings accomplished by NCRM and their collaborators all over the world.



Mr. Yoshio Morozumi

Projects in the pipeline

1. Stem cells as vectors for Genetherapy
2. Establishment of the world's First Corneal Endothelial Stem Cell BANK (CESBANK)
3. Cryopreservation of expanded Corneal Limbal stem cells for future usage in the same patient.
4. Isolation and expansion of adult stem cells of different tissues and studying their transportability, cryopreservation and transplantation for relevant diseases.
5. Isolation and expansion of stem cells from Umbilical Cord blood and studying their lineages and expansion of the same with an aim of growing more hematopoietic stem cells in vitro to treat Thalassemias.

NCRM and ETHICS

NCRM has been having an Institutional Ethics Committee (IEC) since its inauguration to oversee all the projects of NCRM.

Complying with the recent guidelines of the Indian Council of Medical Research (ICMR), an exclusive IC-SCRT (Institutional Committee for Stem Cell Research and Therapy) has been constituted.

The IC-SCRT meets periodically. Regular reports are sent to the relevant authority as per the guidelines.

Developments with the ongoing projects

Corneal Limbal Stem Cells ; Sankara Nethralaya

The project which was started in 2004 with basic research from cadaver-animal and human cells entered the next phase of in-vivo animal study in 2006. Now the animal study has been completed with encouraging results and our work has been accepted for a publication in the "**Tissue Engineering**" journal. A clinical study is to start soon following which the dream of gifting vision to patients with Limbal Stem Cell Deficiency (LSCD) and persistent corneal ulcer will come true.

The members of the NCRM family on this occasion remember the contribution to this study till date, by late Dr.G.Sitalakshmi, who was the principal investigator of the animal study. She shared our vision and was a part of our dream until her untimely death.



(Late) Dr.G.Sitalakshmi

Corneal Endothelial Precursor Cells Four more hospitals join the project

Four more hospitals viz., Darshan Eye Clinic-Chennai, Rajan Eye Care-Chennai, The Light Eye Hospital-Dharmapuri and Shah Satnamji Hospital-Sirsa, Haryana, have joined us in the ongoing research project on corneal endothelial precursors with the Joseph Eye Hospital-Trichy and Aditya Jyot Eye Hospital-Mumbai. The in-vitro expansion of corneal endothelial precursor cell expansion after their isolation and transportation in Indian climatic conditions have been standardized and further work is on to find out a suitable method and scaffold for implantation of the in-vitro expanded cells.

Chondrocytes 3D expansion ; Sri Ramachandra University

The study that the human chondrocytes can be isolated and expanded was presented at the ISSCR meeting in 2007 held at Cairns, Australia. The next phase of the study which focussed on molecular characterization of the specimens grown for longer periods has been accepted for a presentation at the ISAKOS (International Society of Arthroscopy, Knee surgery & Orthopaedic Sports medicine) meeting in Japan to be held in April 2009. Principal investigator Dr.Arumugam will present.

An Immunotherapy bridge between Japan and India

NCRM organised a visit to various hospitals and institutes in Japan offering the Immunotherapy (AIET) for cancer to the team of doctors of Deepam Group of hospitals headed by Dr.A.Pandian, Managing Director & CEO. Dr.Pandian and Dr.Jeyakumar (Director, Deepam Group of Hospitals) visited the hospital and laboratory of the Biotherapy Instt., Tokyo, Japan and had an interaction with Dr.Terunuma. They also discussed with him about the establishment of an exclusive centre for immunotherapy for the cancer patients in their new multi-super specialty hospital coming up in GST Road, Chennai.



Dr.Jeyakumar and Dr.Pandian with Dr.Terunuma; behind them is the hyperthermia eqpt.

India's FIRST PhD program in Stem Cell Research

Acharya Nagarjuna University recognises NCRM for PhD Clinicians and Scientists to work on common themes



Mr.S.Baskar receiving the certificate of his PhD enrollment from Prof.V.Balamohandas, Vice-Chancellor as Prof.K.R.S.Sambasivarao looks on.

Dr.V.Dedeepiya, Mr. S.Manjunath and Mr. S. Baskar were the three scholars enrolled for the 2008-09 session of the PhD, which will take four years for completion. Post-graduate students of life sciences, biotechnology, dentistry and veterinary medicine and undergraduate students of medicine are eligible for applying to this PhD programme. Selection will be done as per the guidelines of the Acharya Nagarjuna University and more details are available in the website of NCRM.

Stem cells & Regenerative Medicine is a unique field which requires people with sound knowledge and expertise in both basic research and clinical translation of the bench side developments to bed side. This unique PhD programme in stem cell research is available for teams of clinicians and basic scientists who will work on a common theme. The clinician will work on the clinical study or translational study whereas the basic scientist will be working on the relevant cell culture/tissue engineering and molecular characterization etc., This way this PhD programme is a unique one.

A Memorandum of Understanding was signed between the Acharya Nagarjuna University, Guntur, Andhrapradesh, represented by its Vice-Chancellor Prof. Balamohandas, and NCRM represented by Dr. Samuel Abraham on 21st April 2008 at Chennai.

The MoU will also allow exchange of scholars between the two institutes and conducting of joint meetings in the field of research.

With an aim of bridging the gap between the clinicians and scientists, NCRM has been taking several initiatives and this is one of the best efforts in that direction. NCRM team acknowledges the University board and Prof. K.R.S.Sambasiva Rao, Professor of Biotechnology for the effort in making this programme getting started.

Meeting on Regenerative Medicine at Ube, Japan

An one day meet on RM was organised by the First Dept. of Medicine, Yamaguchi University, Japan on the 16th of March 2008, in Ube, Japan.

Dr. Abraham had been invited to talk about the Indian scenario of RM and research work on stem cells on that occasion. He shared about the possibilities of collaborations between India and Japan in Regenerative Medicine.

Revolutionary cellular cardio myoplasty for failing left ventricle was presented by the team headed by Prof. Sawa of Osaka and Prof. Ohgushi spoke on the possibilities with MSCs. The speakers also discussed about the various aspects of RM including the regulations. Prof. Sakaida and Dr. Terai had organised the meeting.



Speakers in the Ube symposium L>R: Dr. Abraham (NCRM), Dr. Tsuji (Hiroshima University), Dr. Umegaki (Japan FDA), Dr. Terai & Prof. Sakaida (Yamaguchi University)

Stem cells in Oral Submucosal Fibrosis*

Oral Submucous Fibrosis (OSMF) is a chronic disease of insidious onset featuring the deposition of fibrous tissues in the submucosal layer of the pharynx, palate, fauces, cheek and lips, pharynx, and esophagus caused by chewing Tobacco and Areca Nut, a habit prevalent in several parts of India and South-East Asia.

Pre & Post treatment mouth opening

Pre - treatment mouth opening

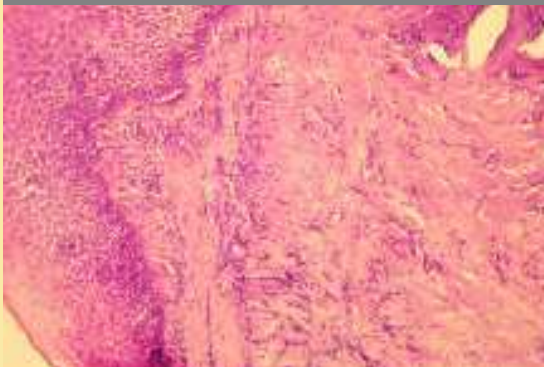


Post - treatment mouth opening

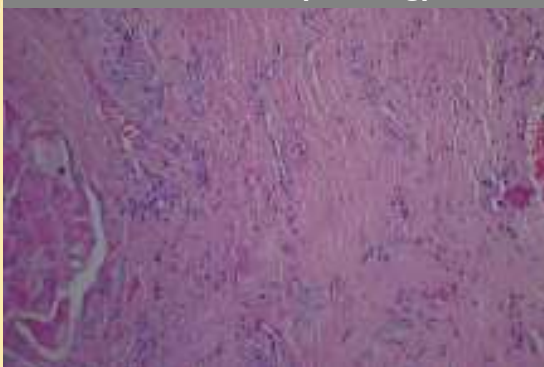


Pre & Post treatment H&E Staining

Pre - treatment histopathology



Post - treatment histopathology



The earliest clinical sign of OSMF is blanching of the oral mucosa. This blanching imparts a marble-like appearance to the oral mucosa, and which can be localized, diffuse, or in the form of a lace-like network. Despite the availability of the current treatments, none of them produce satisfactory results.

Upon observation of several hundred specimens of histopathology of the affected patients, Dr. Sankaranarayanan, Prof. of Oral Pathology, Rajah Muthiah Dental College found that the number of vessels in the affected area were lesser compared to the underlying normal unaffected region. With an aim of making an angiogenesis to bring the blood supply to the affected region thereby making the macrophages reach the site to clear the amorphous collagen, we injected autologous bone marrow mononuclear cells which has ended up with very good results proven with histopathology.

This 43 yrs old male patient was suffering from OSMF for the past 10 yrs. He was treated 3 yrs before with cortisone injection and by other medical managements. Still the disease showed no improvement. He had the complications such as severe burning sensation, difficulty in swallowing, severe blanching, restricted mouth opening and xerostomia.

Following the administration of bone marrow stem cells, the patient did not show any improvement till 4 weeks. 4 weeks later he has started showing predominant complete relief from burning sensation, increased salivary secretion and 5 mm improvement in mouth opening.

This pilot study of an autologous bone marrow stem cell injection has been shown to be safe with efficacy for a pre malignant oral condition called as oral submucous fibrosis both clinically and histopathologically.

* This study was presented in the ISSCR Annual Meeting, 2008, Philadelphia, USA

MoU with Sastra University, Thanjavur.

April 2008: A Memorandum of Understanding was signed between Nichi in Centre for Regenerative Medicine and Sastra University, Thanjavur to collaborate in academic and research areas.

Sastra university is an educational institute soon celebrating its Silver Jubilee with basic research facility and student scholars in nano-biotechnology and NCRM has expertise in cell-culture and tissue engineering.

These two will work on specific areas of mutual interest.

The MoU was signed by Dr. S. Swaminathan representing Sastra and Dr. S. Abraham NCRM, to start the collaboration.



Dr. S. Swaminathan with Dr. Abraham during the MoU signing

Toronto - Chennai bridge of Regenerative Medicine

The Training Programme in Regenerative Medicine (TPRM) affiliated with the University of Toronto, McMaster University and Ottawa University, starts its first offshore programme in India at Nichi-In Centre for Regenerative Medicine - First of its kind in India!



The first batch of NCRM-TPRM scholars (2008-09)

From Left to Right:

1. Mr. R. Senthil Nagarajan (NCRM- Scholar)
2. Dr. P. Mohan Sunil (Dental Surgeon, Ranipet)
3. Mr. P. Murugan (NCRM- Scholar)
4. Dr. B. Justin Williams (Professor, Veterinary Surgery, TANUVAS, Chennai)
5. Mr. V. Srinivasan (NCRM-Scholar)
6. Dr. V. Dedeepiya (Clinical Coordinator-NCRM)
7. Dr. K. Balakrishnan (Asst professor, Bharathidasan University, Trichy)
8. Dr. G. Sivaraman (Consultant Surgeon, Shrushti Hospital, Chennai)
9. Ms. Pavithra Shivakumar (Lecturer, Women's Christian College, Chennai)
10. Dr. Shobhana Parikumar (Physician, The Light Eye Hospital, Dharmapuri)

A series of 30 lectures live-webcasted at NCRM from the University of Toronto with interactive sessions with the speaker started in the month of September and will be completed in April 2009. The attendees will be issued a certificate by the Stem Cell Network of Canada/University of Toronto.

The purpose of this initiative is to encourage a trans-disciplinary, integrative approach to health research through the training of a new generation of researchers capable of combining various approaches in devising innovative solutions for the research and treatment of complex medical problems. Starting from organ failure to repair mechanisms, stem cell biology, ethics and translation, this course will cover extensively the various areas of regenerative medicine.



" There are few scientists and practitioners in regenerative medicine, and no inclusive training program exists in this important field in Canada or to my knowledge anywhere in the world. The mandate of the TPRM is to ensure that there will be qualified researchers and practitioners to develop and practice in this field which has the potential to greatly reduce medical and social costs, to provide qualified, innovative personnel for the biotechnology and pharmaceutical industries, and to prolong and improve the lives of hundreds of thousands of patients"

- Prof. Gary Levy, TPRM Director.

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